



PATENT SPECIFICATION

599,354

Application Date: Sept. 17, 1945.

No. 23918/45.

Complete Specification Accepted: March 10, 1948.

COMPLETE SPECIFICATION

Panel Securing Pin

I, THOMAS FRANCIS TRIBE, a British Subject, of 9, Quarry Road, Headington, Oxford, Oxfordshire, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to clips or pins for securing together temporarily, metal sheets or panels which are subsequently to be joined together by welding or riveting.

There have been many proposals for this purpose and one of the principal characteristics of such known devices is the provision of a pair of adjacent pegs, one of which is capable of being moved with respect to the other to create a narrow neck to permit the insertion of a pin in registering holes in the work pieces, the return movement of said pegs causing them substantially to fill the holes and the work pieces to be held together throughout the subsequent riveting or welding operations. The relative displacement of the pegs is against the thrust of a spring, which must be sufficiently strong to hold the work pieces together. It is found that in order to displace the pegs, a tool, resembling a pair of pliers, must generally be used both to insert the pin in the work and to remove it therefrom.

The object of the present invention is to provide an improved pin, constructed very simply, employing a very few parts, without a spring and capable of being operated easily by hand without the use of any tool.

According to the present invention, a panel securing pin consists of a body member, and the pin proper, pivoted on said body member, the pin proper having two legs or limbs co-operating with tapered surfaces on the body member in such manner that in one position said legs are forced together (to permit the insertion of the pin in registering holes in the work pieces) and in a second position the legs move or are thrust apart to hold, in collaboration with cam surfaces formed on said body member, the work pieces together. The body portion

itself consists of a generally U-shaped member, the limbs of the U at one end are tapered and are formed with substantially semi-circular bulges, which are themselves formed with small out-turned flanges to provide the edge cams. The pin proper, consisting of a hardened steel rod, formed with a nose at one end and split centrally along the greater part of its length, is pivoted between the bulged limbs of the U-member but asymmetrically thereof. These limbs are themselves formed with a taper so that in one position of the pin proper, its legs are forced together (in which position the pin can enter the holes in the work) and in another position, for example after swinging the pin through an angle of 90°, the legs take up a position in spaced relationship (due to their inherent resilience) in which position they will substantially fill the hole in the work pieces which will be clamped together, between the nose of the pin and the edge cam of the body.

This arrangement has the definite advantage that the pin will engage the sides of the holes in the work pieces throughout their circumferences (except for the slot in the pin) thus ensuring greater exactitude of registration, no springs or tools are required, it being simply necessary to swing the pin by hand until its legs are forced together by the tapering body, insert it into the holes in the work until the edge cam of the body bears against the work and then by an easy pressure on the lever part of the body, swing the body to the position wherein the legs move apart to fill the holes, at the same time the edge cam rides over the work to clamp the pieces or panels firmly together between the nose of the pin and the edge cams.

In order more positively to ensure that the legs move apart when released from pressure by the tapered body, as may be necessary after the device has been in use for some time due to fatigue in the metal of the pin, there may be provided a simple wedge plate, secured to the body and shaped to pass through the slot in the pin proper, its narrowest part

[Price 1/-]

Price 4s 6d

being arranged to correspond with the position of the pin with the legs forced together, whilst its width is progressively increased to a maximum in the position where the legs of the pin are apart or in this case, thrust apart, to grip the work pieces.

If desired a pressure pad, of fibre, compressed felt or the like may be carried loosely on the pin, to be interposed between the work pieces and the edge cams, which will bear against said pad to thrust it against the work when in operative position, whereby marking of the work by a rubbing action of the edge cams is wholly avoided, which is desirable where the surface of the work is highly polished.

The invention will now be described with reference to the accompanying drawings in which:—

Figure 1 is a side elevation of the pin showing its position for insertion into the holes in the work pieces,

Figure 2 is a similar view showing the pin in operative position to clamp said work pieces,

Figure 3 is an end view with the pin in the position of Figure 1,

Figure 4 is a similar view with the pin in the position of Figure 2,

Figure 5 is a view looking towards the tip of the pin in the work pieces to twice the scale of Figure 1, with the pin in the position of Figure 1 and

Figure 6 is a similar view, with the pin in the position of Figure 2 whilst Figure 7 is a view similar to Figure 1 above, showing a slight addition.

Referring to Figures 1 to 6, the body 11 consists of a U-shaped member, which if made of sheet metal, may be produced by pressing, having its limbs, towards one end, formed with substantially semi-circular bulges 12, 13, the edges of said bulges being formed with out-turned flanges 14, 15, which serve as the edge-cams. The limbs 12 and 13 are tapered as at 16, 17, from the base 18 outwardly as can be seen clearly in Figures 3 and 4. Pivoted between the limbs 12 and 13, by means of the pivot 19, is the pin proper 20, of spring steel, which is split, as shown particularly in Figure 4, over the greater portion of its length, as at 25, to provide the legs 21 and 22. The legs are each formed with noses 23 and 24. Held between the limbs 12 and 13 by the rivets 27 and arranged to pass between the legs 21 and 22 of the pin 20, is a tapered plate 26.

The operation is as follows:—

To register holes in work pieces 30 and 31, and to clamp said pieces together, the pin 20 is placed in approximate align-

ment with the body 11, as in Figure 1. In this position the legs 21 and 22 are forced together by the action of the taper 16 and 17 of the limbs 12 and 13, and the tapered plate 26 is so arranged that its narrowest dimension corresponds with this position of the pin. The legs will then adopt the position indicated in Figure 5 and can pass through the holes in the work pieces. The body 11 is then swung through an angle of 90° by a simple pressure, whereupon the legs 21 and 22 move apart by their own resiliency and are further thrust positively apart due to the action of the tapered plate 26. The legs expand therefore substantially to fill the holes in the work pieces and at the same time, the edge cams 14 and 15 engage the face of the work, which is consequently clamped between said edge cams and the shoulders on the noses 23 and 24. The position of the pin is then as shown in Figure 6.

To remove the pin, all that is necessary is to swing the body 11 back through 90° when the legs 21 and 22 are squeezed together, and can be withdrawn from the work.

In Figure 7 a pressure pad 40, of fibre or compressed felt or the like, is carried loosely on the pin 20 to be interposed between the surface of the work piece 31 and the edge cams 14 and 15, to avoid marking of said surface when the device is in the operative position.

The pin of this invention is very simple, it requires no external tool for its operation, it is capable of being inserted and very rapidly clamped in the work by an easy pressure on a lever, it has no springs, and the pin proper is very robust, so that the possibility of breakage is very greatly reduced. The pin itself in its operative position, positively registers the work pieces as it is at all times substantially circular in cross section, the nose engages the work evenly around the edges of the holes and in conjunction with the edge cam, grips them cleanly and positively. After the welding or riveting operations are completed, the pin may be removed simply by swinging the lever and withdrawing the pin.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A clip or pin for securing together temporarily sheet metal plates or stampings which are to be subsequently joined together by welding or riveting which consists of a body member and the pin proper pivoted on said body member.

the pin proper having two legs or limbs which co-act with tapered surfaces on the body member such that in one position the legs are forced together (to permit the insertion of the pin in registering holes in the work pieces) whilst in a second position the legs move or are thrust apart to hold or clamp, in collaboration with cam surfaces on said body member, the work pieces together.

2. A clip or pin for securing together temporarily sheet metal plates or stampings which are to be subsequently joined together by welding or riveting which consists of a body member and the pin proper pivoted on said body member, the pin proper having two legs or limbs which co-act with tapered surfaces on the body member such that in one position the legs are forced together (to permit the insertion of the pin in registering holes in the work pieces), whilst in the second position the legs move or are thrust apart to hold or clamp, in collaboration with a pressure pad actuated by cam surfaces on said body member, said work pieces together.

3. A panel securing pin as claimed in Claim 1 or Claim 2 in which the pin proper consists of a steel rod split along the greater part of its length and formed with enlarged ends or nose pieces and co-acting with the body member to which it is pivoted such that in one position the nose pieces are forced together, whilst in the second position they move apart under their own resilience.

4. A panel securing pin as claimed in Claim 1 or Claim 2 in which the pin proper consists of a steel rod split along the greater part of its length and formed with enlarged ends or nose pieces and co-acting with the body member to which it is pivoted such that in one position the nose pieces are forced together, whilst in the second position they are thrust apart by a tapered plate centrally disposed with respect to, and

secured to, said body member.

5. A panel securing pin as claimed in Claim 2 in which the pressure pad is carried loosely on the pin.

6. A panel securing pin as claimed in Claim 1 or Claim 2 in which the body member consists of a generally U-shaped portion formed with substantially semi-circular extensions at one end, the substantially semi-circular extensions being themselves formed with flanges which constitute the edge cams of the device.

7. A panel securing pin as claimed in Claim 6 in which the pin proper is pivoted to the body member asymmetrically of the substantially semi-circular extensions.

8. A panel securing pin as claimed in Claim 6 in which the limbs of the U-shaped body are tapered outwardly from the base of the U substantially as and for the purpose described.

9. A panel securing pin as claimed in any of the preceding Claims in which in one position of the pin proper its legs are forced together by co-acting with the tapered surfaces of the body member (to permit the insertion of said pin in registering holes in the work pieces), whilst in the second position the legs are thrust apart by a tapered plate mounted centrally of the body member which passes between said legs, enlarged ends or nose pieces of said legs bearing against one side of the work pieces to clamp said work pieces between said noses and the edge cams formed on the body member.

10. A panel securing pin for securing together temporarily work pieces to be subsequently welded or riveted together substantially as hereinbefore described with reference to the accompanying 90 drawings.

Dated the 14th day of September, 1945.

T. M. CONNELLY,
Chartered Patent Agent,
Agent for the Applicant.

[This Drawing is a reproduction of the Original on a reduced scale.]

